

**Clouds and the Earth's Radiant Energy System  
(CERES)**

**Data Management System**

**CERES Time Interpolation and Spatial Averaging (TISA)  
(Subsystems 7.1, 8.0, & 10.0)**

**Test Plan**

**Release 4  
Version 1**

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## Document Revision Record

The Document Revision Record contains information pertaining to approved document changes. The table lists the date the Software Configuration Change Request (SCCR) was approved, the Release and Version Number, the SCCR number, a short description of the revision, and the revised sections. The document authors are listed on the cover. The Head of the CERES Data Management Team approves or disapproves the requested changes based on recommendations of the Configuration Control Board.

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## 1.0 Introduction

The Clouds and the Earth's Radiant Energy System (CERES) is a key component of the Earth Observing System (EOS) program. The CERES instrument provides radiometric measurements of the Earth's atmosphere from three broadband channels: a shortwave channel (0.3 - 5  $\mu\text{m}$ ), a total channel (0.3 - 200  $\mu\text{m}$ ), and an infrared window channel (8 - 12  $\mu\text{m}$ ). The CERES instruments are improved models of the Earth Radiation Budget Experiment (ERBE) scanner instruments, which operated from 1984 through 1990 on the National Aeronautics and Space Administration's (NASA) Earth Radiation Budget Satellite (ERBS) and on the National Oceanic and Atmospheric Administration's (NOAA) operational weather satellites NOAA-9 and NOAA-10. The strategy of flying instruments on Sun-synchronous, polar orbiting satellites, such as NOAA-9 and NOAA-10, simultaneously with instruments on satellites that have precessing orbits in lower inclinations, such as ERBS, was successfully developed in ERBE to reduce time sampling errors. CERES continues that strategy by flying instruments on the polar orbiting EOS platforms simultaneously with an instrument on the Tropical Rainfall Measuring Mission (TRMM) spacecraft, which has an orbital inclination of 35 degrees. In addition, to reduce the uncertainty in data interpretation and to improve the consistency between the cloud parameters and the radiation fields, CERES includes cloud imager data and other atmospheric parameters. The TRMM satellite carries one CERES instrument while the EOS satellites carry two CERES instruments, one operating in a fixed azimuth plane scanning mode (FAPS) for continuous Earth sampling and the other operating in a rotating azimuth plane scan mode (RAPS) for improved angular sampling.

### 1.1 Document Overview

This document, the [CERES Release 3 Test Plan for the Time Interpolation and Averaging Subsystems 7.1 and Subsystem 10.0, Version 1](#), provides a description of the CERES Time Interpolation and Spatial Averaging Release 3 software and supporting data files and explains the procedures for installing, executing, and testing the software. A section is also included on validating the results of executing the software. A description of acronyms and abbreviations is provided in [Appendix A](#), a directory structure diagram is contained in [Appendix B](#), and a description of the software and data files is contained in [Appendix C](#).

The document is organized as follows.

[Section 1.0 - Introduction](#)

[Section 2.0 - Software and Data File Installation Procedures](#)

[Section 3.0 - Test and Evaluation Procedures](#)

[Appendix A - Acronyms and Abbreviations](#)

[Appendix B - Directory Structure Diagrams](#)

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## 1.2 Subsystem Overview

### 1.2.1 CERES Time Space Interpolation (TSI) Subsystem 7.1 Main Processor

The time interpolation process (7.1), one of the two key parts of Subsystem 7.0, temporally interpolates CERES data and produces global synoptic maps of top-of-the-atmosphere (TOA) fluxes and cloud properties on a 1.0-degree equal-area grid. Another key part of Subsystem 7.0, the Synoptic Surface and Atmospheric Radiation Budget (SARB), Subsystem 7.2, produces the Intermediate Synoptic Radiative Fluxes and Clouds (SYNI), which contains the vertical structure of atmospheric and surface flux using the interpolated data as input and boundary conditions.

The main input to the time interpolation process is the Hourly Gridded Single Satellite Fluxes and Clouds (FSW) product, produced by Atmospheric Gridding and Spatial Averaging, Subsystem 6.0. The gridded shortwave (SW) and longwave (LW) TOA fluxes and cloud information are the key items to be interpolated. The radiative profile will be recalculated in the SARB part of Subsystem 7.0 using the interpolated fluxes as constraints. This process produces the internal product, Time Space Interpolate (TSI). These files contain nested grid region data which is the input to Subsystem 7.2.

The time interpolation process produces global maps of TOA total-sky LW and SW flux, TOA clear-sky LW and SW flux, TOA window radiances, and cloud properties at Universal Time (UT) for every day of the month. The process of producing synoptic maps involves:

1. Cloud properties from the CERES times of observation are interpolated for every hour of the month.
2. The CERES TOA LW and SW fluxes are interpolated for every hour using geostationary data to assist in modeling meteorological variations between times of observations.

### 1.2.2 Compute Regional, Zonal, and Global Averages Subsystem 8.0 Main Processor

The Monthly Regional, Zonal, and Global Radiation Fluxes and Cloud Properties Subsystem 8.0 produces regional, zonal and global monthly and monthly-hourly means. These means are calculated from one month of synoptic maps on a regional basis and then combined to produce zonal and global averages.

The main input to this Subsystem is the Surface and Atmospheric Radiation Budget (SARB) product, produced by Subsystem 7.2, SYNI. This product contains one month of 3-hourly synoptic maps of top-of-atmosphere (TOA) LW and SW fluxes, TOA window fluxes, upwelling and downwelling SW and LW fluxes at each standard CERES pressure level, and numerous cloud parameters for each region of the CERES global 1.0-degree equal-area grid. The flux parameters include both total-sky and clear-sky.

The three archival products output from this Subsystem are the Monthly Regional Radiative Fluxes and Clouds (AVG) product (HDF format) which contains regional monthly and monthly-hourly means of fluxes and cloud parameters, the Monthly Zonal and Global Radiative Fluxes, Clouds

(ZAVG) product (HDF format) which contains the zonal and global monthly and cloud parameters, and the Synoptic Radiative Fluxes and Clouds (SYN) product (HDF format) which contains regional synoptic hourly means of fluxes and cloud parameters.

The main steps involved in the averaging process are:

1. Read the synoptically ordered data.
2. Average the flux data to produce regional synoptic hourly, monthly and monthly-hourly means.
3. Average the cloud properties using the specified weighting schemes to produce regional synoptic hourly, monthly and monthly-hourly means.
4. Average the regional means to produce zonal means.
5. Average the zonal means to produce global means.

### **1.2.3 Compute Monthly and Regional TOA and SRB Averages Subsystem 10.0 Main Processor**

The Monthly Regional TOA and SRB Averages Subsystem (10.0) computes averages of TOA longwave (LW) and shortwave (SW) fluxes, surface fluxes, and cloud properties on regional, zonal, and global spatial scales. The main input to Subsystem 10.0 is the Hourly Gridded Single Satellite TOA and Surface Fluxes and Clouds (SFC) product produced by Surface Gridding and Spatial Averaging Subsystem (9). SFC contains hourly single satellite flux and cloud properties averaged over 1.0-degree regions. Subsystem 10.0 produces the Monthly Regional TOA and SRB Averages (SRBAVG) product (HDF-EOS format). Two methods are used to compute the regional TOA total-sky flux averages. TOA flux estimates from both of the two methods are used to produce estimates of surface flux at all temporal and spatial scales using the TOA-to-surface flux parameterization schemes for shortwave and longwave.

The process of producing the means stored in SRBAVG involves:

1. The TOA clear-sky flux data, surface flux data, and the cloud property data are linearly interpolated.
2. Monthly and monthly-hourly means are calculated from the interpolated fluxes and cloud properties on regional, zonal, and global scales.

## 2.0 Software and Data File Installation Procedures

This section describes how to install Time Interpolation and Space Averaging (TISA) Averaging Subsystems 7.1 and Subsystem 10.0 software in preparation for making the necessary test runs at the Langley Atmospheric Sciences Data Center (ASDC). The installation procedures include instructions for uncompressed and untarring the delivered tar files, properly defining environmental variables, and compiling the TISA Averaging source code.

### 2.1 Installation

Software/Delta File Install Procedure:

1. The scripts, Makefile, and Process Control Files in Subsystems 7.1 and Subsystem 10.0 expect the CERES environment variable, **\$CERESENV**, to point to a file which sets the following environment variables:

<b>PGSDIR</b>	Directory for <b>Toolkit</b> libraries
<b>F90</b>	Pointer to the SGI F90 64-bit compiler
<b>CERESHOME</b>	Top Directory for CERES software
<b>CERESLIB</b>	Directory for CERESlib
<b>F90COMP, FCOMP</b>	SGI 64-bit Fortran 90 compile flags
<b>F90LOAD</b>	SGI 64-bit Fortran 90 load flags
<b>PGSMMSG</b>	Directory which contains <b>Toolkit</b> and <b>CERES</b> Status Message Files
<b>PGSINC</b>	Pointer to the PGS include file directory
<b>HDFDIR</b>	Pointer to the HDF home directory
<b>HDFEOSDIR</b>	Pointer to the HDF-EOS home directory

2. Change directory to the directory where you plan to install the TISA Averaging Subsystem. The following instructions assume that the directory will be **\$CERESHOME**.
3. For **Subsystem 7.1**, uncompress and untar the tar files by replacing **XXX** with the appropriate SCCR number and typing the following commands:

```

source $CERESENV
cd $CERESHOME/tisa_avg/data/
rm -r ancillary
cd $CERESHOME/tisa_avg/src/
rm -r Tisavg_main_lib
rm -r Interpolation_lib
rm -r Average_lib
rm -r ss7_main
cd $CERESHOME
uncompress TISAavg_anc_R3-XXX.tar.Z
tar xvf TISAavg_anc_R3-XXX.tar
uncompress TISAavg_src_1_R3-XXX.tar.Z
tar xvf TISAavg_src_1_R3-XXX.tar

```

```
uncompress TISAavg_data7_1_R3-XXX.tar.Z  
tar xvf TISAavg_data7_1_R3-XXX.tar  
uncompress TISAavg_data7_2_R3-XXX.tar.Z  
tar xvf TISAavg_data7_2_R3-XXX.tar
```

4. For **Subsystem 8**, uncompress and untar the tar files by replacing **XXX** with the appropriate SCCR number and typing the following commands:

```
uncompress TISAavg_anc_R3-XXX.tar.Z  
tar xvf TISAavg_anc_R3-XXX.tar  
uncompress TISAavg_src_R3-XXX.tar.Z  
tar xvf TISAavg_src_R3-XXX.tar  
uncompress TISAavg_data8_1_R3-XXX.tar.Z  
tar xvf TISAavg_data8_1_R3-XXX.tar  
uncompress TISAavg_data8_2_R3-XXX.tar.Z  
tar xvf TISAavg_data8_2_R3-XXX.tar  
uncompress TISAavg_data8_2_R3-XXX.tar.Z  
tar xvf TISAavg_data8_3_R3-XXX.tar  
uncompress TISAavg_data8_3_R3-XXX.tar.Z  
tar xvf TISAavg_data8_4_R3-XXX.tar  
uncompress TISAavg_data8_4_R3-XXX.tar.Z
```

5. For **Subsystem 10**, uncompress and untar the tar files by replacing **XXX** with the appropriate SCCR number and typing the following commands:

```
source $CERESENV  
cd $CERESHOME/tisa_avg/data/  
rm -r ancillary  
rm -r data10  
cd $CERESHOME/tisa_avg/src/  
rm -r Tisavg_main_lib  
rm -r Interpolation_lib  
rm -r Average_lib  
rm -r ss10_main  
cd $CERESHOME  
uncompress TISAavg_anc_R3-XXX.tar.Z  
tar xvf TISAavg_anc_R3-XXX.tar  
uncompress TISAavg_src_1_R3-XXX.tar.Z  
tar xvf TISAavg_src_1_R3-XXX.tar  
uncompress TISAavg_src_2_R3-XXX.tar.Z  
tar xvf TISAavg_src_2_R3-XXX.tar  
uncompress TISAavg_data10_1_R3-XXX.tar.Z  
tar xvf TISAavg_data10_1_R3-XXX.tar  
uncompress TISAavg_data10_2_R3-XXX.tar.Z  
tar xvf TISAavg_data10_2_R3-XXX.tar  
uncompress TISAavg_data10_3_R3-XXX.tar.Z  
tar xvf TISAavg_data10_3_R3-XXX.tar
```

## 6. Directory - Files/Direction

**NOTE:** If the PMOA files are not included in the delivery, then skip this step.

Since PMOA files are delivered, the above PMOA files are required to be moved to this directory:

```
$CERESHOME/tisa_grid/data/out_comp/data/PMOA
```

## 2.2 Compilation

1. For **Subsystem 7.1**, **Subsystem 8**, and **Subsystem 10** create the message files and message include files:

```
source $CERESENV
cd $CERESHOME/tisa_avg/smf
$CERESLIB/bin/smfccompile_all.csh
```

The smfccompile\_all.csh will send a message to the screen at completion to indicate whether or not the compile was successful. ASDC personnel may have an alternate procedure for compiling these message files. Any alternate procedure should copy all message include files to the \$PGSINC directory and all message files to the \$PGMSG directory.

2. For **Subsystem 10**, **webplot.exe**, the executable for creating binary data files and converting to .gif files for web plotting for **Subsystem 10**, is not provided on the tar file. To create the executable on directory \$CERESHOME/tisa\_avg/web/plot/dat, type the following commands:

```
source $CERESENV
cd $CERESHOME/tisa_avg/web/plot/dat
make -f makeplot
```

**NOTE:** The executable, webplot.exe, is run during processing of Subsystem 10, so the above steps must be done before running Subsystem 10.

3. For the **Subsystem 7.1** Main Processor, **tisa7.exe**, the executable for the **Subsystem 7.1** Main Processor, is not provided on the tar file. To create the executable on directory \$CERESHOME/tisa\_avg/bin, type the following commands:

```
cd $CERESHOME/tisa_avg/bin
source $CERESENV
source $CERESHOME/tisa_avg/bin/setup_test-env.csh
source $CERESHOME/tisa_avg/bin/ENV7.1.1P1-env.csh
cd $CERESHOME/tisa_avg/src
compile_ss7.csh
```

4. For the **Subsystem 8** Main Processor, **tisa8.exe**, the executable for the **Subsystem 8** Main Processor, is not provided on the tar file. To create the executable on directory \$CERESHOME/tisa\_avg/bin, type the following commands:

```
cd $CERESHOME/tisa_avg/bin  
source $CERESENV  
source $CERESHOME/tisa_avg/bin/setup_test-env.csh  
source $CERESHOME/tisa_avg/bin/ENV8.1P1-env.csh  
cd $CERESHOME/tisa_avg/src  
compile_ss8.csh
```

5. For the **Subsystem 10** Main Processor, the executable **tisa10.exe** is not provided on the tar file. To create the executable on directory **\$CERESHOME/tisa\_avg/bin**, type the following commands:

```
cd $CERESHOME/tisa_avg/bin  
source $CERESENV  
source $CERESHOME/tisa_avg/bin/setup_test-env.csh  
source $CERESHOME/tisa_avg/bin/ENV10.1P1-env.csh  
cd $CERESHOME/tisa_avg/src  
compile_ss10.csh
```

6. For **Subsystem 8**, **comp8.exe** is the executable generating ascii files for comparison purposes. To create the executable in directory **\$CERESHOME/tisa\_avg/test\_suites/CER8.1P1**, type the following commands:

```
cd $CERESHOME/tisa_avg/test_suites/CER8.1P1  
make -f makecmp_8
```

7. For **Subsystem 10**, **comp10.exe** is the executable generating binary files for comparison purposes. To create the executable in directory **\$CERESHOME/tisa\_avg/test\_suites/test\_10**, type the following commands:

```
| cd $CERESHOME/tisa_avg/test_suites/CER10.1P1  
| make -f makecmp_10
```

## 3.0 Test and Evaluation Procedures

This section provides general information on how to execute Subsystem 10.0 and provides an overview of the test and evaluation procedures. It includes a description of what is being tested and the order in which the tests should be performed.

### 3.1 CER7.1.1P1 Main Processor for Subsystem 7.1

#### 3.1.1 Stand-alone Test Procedures

##### 3.1.1.1 PCF Generator

The Main Processor production script, **CER7.1.1P1**, references a Process Control File (PCF) which contain the correct file names and paths for the test procedures. The PCF file for the test case is created by first executing an ASCII file generator, **tisavg\_ascii\_gen-test.csh**, and then executing the PCF generator, **tisavg\_pcfgen.csh**.

For production run, the ASCII file generator, **tisavg\_ascii\_gen.csh**, must be executed to create the ASCII input file for a particular production run. The ASCII file generator requires four command-line arguments: 1-digit Subsystem Number(7); 4-digit Data Year(1998); 2-digit Data Month(01); and 1-character GGEO data file exist flag(Y), (Optional, default value = Y). The PCF generator, **tisavg\_pcfgen.csh**, then executes using the newly created ASCII input file name as a command-line argument.

**NOTE:** The PCF generator script, **tisavg\_pcfgen.csh**, uses the file PCF.template. Therefore, PCF.template must exist in the \$CERESHOME/tisa\_avg/bin directory.

1. Generate the ASCII input file for the test case:

```
cd $CERESHOME/tisa_avg/bin
source $CERESENV
source $CERESHOME/tisa_avg/bin/setup_test-env.csh
source $CERESHOME/tisa_avg/bin/ENV7.1.1P1-env.csh
setenv year 2001
setenv month 07
setenv DATADATE 200107
setenv INSTANCE Terra-FM1-MODIS_SSIT_000000.$DATADATE
$CERESHOME/tisa_avg/bin/tisavg_ascii_gen_test.csh 7 $year $month Y
```

The following file will be generated in \$CERESHOME/tisa\_avg/pcf/:

- **CER7.1.1P1\_PCFin\_\$INSTANCE**

2. Generate the PCF for the test case:

```
$CERESHOME/tisa_avg/bin/tisavg_pcfgen.csh $CERESHOME/tisa_avg/rcf/  
CER7.1.1P1_PCFin_$INSTANCE
```

The following PCF will be generated in **\$CERESHOME/tisa\_avg/rcf/**:

- **CER7.1.1P1\_PCF\_\$INSTANCE**

### 3.1.1.2 Execution

The production script is executed by typing the script name, **CER7.1.1P1**, followed by three command-line arguments: year (YYYY), month (MM), and PCF file name.

```
$CERESHOME/tisa_avg/bin/CER7.1.1P1 $year $month  
CER7.1.1P1_PCF_$INSTANCE
```

The Main Processor, Product Generation Executive (PGE) CER7.1.1P1, will be executed and will create the following files in **\$CERESHOME/tisa\_avg/data/data\_7/out\_comp**:

- **CER\_TSIB\_\$INSTANCE\Zi\***
- **CER\_TSIB\_\$INSTANCE\Zi\*.met**
- **CER\_JRGRP\_\$INSTANCE**
- **CER\_JRGRP\_\$INSTANCE.met**
- **CER\_JVREG\_\$INSTANCE**
- **CER\_JVREG\_\$INSTANCE.met**

\*i indicates multiple files which, for the test case, range from 052 - 054.

### 3.1.1.3 Exit Codes

The processor CER7.1P1 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS). Successful completion is indicated by an exit code of 0. Failure is indicated by an exit code 202.

### 3.1.1.4 Main Processor Test Summary

Total Run Time:	5:20 minutes
Memory:	39984 K
Required Disk Space:	2.5 GB

### 3.1.2 Evaluation Procedures

When running the production script, **CER7.1.1P1**, the system message, ‘No match’, may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

#### 3.1.2.1 Log and Status File Results

The Error and Status Log File, CER7.1.1P1\_LogReport\_\$INSTANCE, is located in directory \$CERESHOME/tisa\_avg/data/data\_7/runlogs.

#### 3.1.2.2 Metadata

Metadata files which end in extension, ‘.met’, are located in the same directory as their corresponding output files after CER7.1P1 has been executed.

#### 3.1.2.3 Execution of Comparison Software

Due to the size of the output of SS7.1 (307 megabytes), only three of the 180 files is being delivered in this package; however, the rest will be provided if requested. The evaluation software for SS7.1 does a diff on the one file in out\_exp and the first file created during processing:

```
cmp $CERESHOME/tisa_avg/data/data_7/out_exp/CER_TSIB_$INSTANCE'Zi*'  
      $CERESHOME/tisa_avg/data/data_7/out_comp/CER_TSIB_$INSTANCE'Zi*'*
```

\*i indicates multiple files which, for the test case, range from 052 -054.

### 3.1.3 Solutions to Possible Problems

1. All output files are opened with status=NEW. These files must be removed before running test procedures. A script, which removes PGE created files, **cleanup\_7.1.1P1.csh**, is located in directory \$CERESHOME/tisa\_avg/bin. To use the clean-up files for **CER7.1.1P1**:

```
$CERESHOME/tisa_avg/bin/cleanup_7.1.1P1.csh
```

2. Environment variable F90 must be set to the 64-bit SGI F90 compiler.

## 3.2 CER8.1P1 Main Processor

### 3.2.1 Stand Alone Test Procedures

#### 3.2.1.1 PCF Generator

The Main Processor production script, **CER8.1P1**, references a Process Control File (PCF) which contain the correct file names and paths for the test procedures. The PCF for the test case is created by first executing an ASCII file generator, **tisavg\_ascii\_gen-test**, and then executing the PCF generator, **tisavg\_pcfgen.csh**.

For production runs, the ASCII file generator, tisavg\_ascii\_gen, must be executed to create the ASCII input file for a particular production run. The ASCII file generator requires four command line arguments, 1 or 2-digit subsystem number, 4-digit Data Year, 2-digit Data Month, 1 character GGE0 data file exist flag(N). The PCF generator, tisavg\_pcfgen.csh, is then executed using the newly created ASCII input file name as a command line argument.

**NOTE:** The PCF generator script, **tisavg\_pcfgen.csh**, uses the file PCF.template. Therefore, PCF.template must exist in the same directory.

1. Generate the ASCII input file for the test case:

```
cd $CERESHOME/tisa_avg/bin
source $CERESENV
source $CERESHOME/tisa_avg/bin/setup_test-env.csh
source $CERESHOME/tisa_avg/bin/ENV8.1P1-env.csh
setenv year 2001
setenv month 07
setenv DATADATE 200107
setenv INSTANCE Terra-FM1-MODIS_SSIT_000000.$DATADATE
$CERESHOME/tisa_avg/bin/tisavg_ascii_gen_test.csh 8 $year $month N
```

The following file will be generated in **\$CERESHOME/tisa\_avg/rcf/**:

- **CER8.1P1\_PCFin\_\$INSTANCE**

  2. Generate the PCF for the test case:

```
$CERESHOME/tisa_avg/bin/tisavg_pcfgen.csh $CERESHOME/tisa_avg/rcf/
CER8.1P1_PCFin_$INSTANCE
```

The following PCF will be generated in **\$CERESHOME/tisa\_avg/rcf/**:

- **CER8.1P1\_PCF\_\$INSTANCE**

### 3.2.1.2 Execution

The production script is executed by typing the script name, **CER8.1P1**, followed by three command-line arguments: year (YYYY), month (MM), and PCF file name.

```
$CERESHOME/tisa_avg/bin/CER8.1P1 $year $month  
CER8.1P1_PCF_$INSTANCE
```

The Main Processor, Product Generation Executive (PGE) CER\_8.1P1, will be executed and will create the following files in **\$CERESHOME/tisa\_avg/data/data\_8/out\_comp**:

- **CER\_AVG\_\$INSTANCE**
- **CER\_AVG\_\$INSTANCE.met**
- **CER\_ZAVG\_\$INSTANCE**
- **CER\_ZAVG\_\$INSTANCE.met**
- **CER\_SYN\_\$INSTANCE\i\***
- **CER\_SYN\_\$INSTANCE\i\*.met**
- **CER\_LRGGRP\_\$INSTANCE**
- **CER\_LRGGRP\_\$INSTANCE.met**

\*i indicates multiple day files which, for the test case, range from 01-31.

### 3.2.1.3 Exit Codes

All **CER8.1P1** software terminates using the CERES defined EXIT CODES for the Langley TRMM Information System (LaTIS). Successful completions indicated by an exit code of 0.

### 3.2.1.4 Main Processor Test Summary

Total Run Time:	2 hours 15 minutes and 45 seconds
Memory:	242224 K
Required Disk Space:	19.08 GB

## 3.2.2 Evaluation Procedures

When running the production script, **CER8.1P1**, the system message, ‘No match’, may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

### 3.2.2.1 Log and Status File Results

The Error and Status Log File, CER8.1P1\_LogReport\_\$INSTANCE is located in directory **\$CERESHOME/tisa\_avg/data/data\_8/runlogs**.

### 3.2.2.2 Metadata

Metadata files which end in extension, '.met', are located in the same directory as their corresponding output files after CER8.1P1 has been executed.

### 3.2.2.3 Execution of Comparison Software

The delivered input files are in \$CERESHOME/tisa\_avg/data/data\_8/out\_exp and new input files from the execution are in \$CERESHOME/tisa\_avg/data/data\_8/out\_comp. These input files are accessed from those areas for the comparison.

**eval\_ss8\_output.csh** is a script needed to execute the comparison program. Type the following:

```
cd $CERESHOME/tisa_avg/test_suites/CER8.1P1  
eval_ss8_output.csh
```

### 3.2.3 Solutions to Possible Problems

1. All output files are opened with status=NEW. These files must be removed before running test procedures. A script, which removes PGE created files, **cleanup\_8.1P1.csh**, is located in directory **\$CERESHOME/tisa\_avg/bin**. To use the clean-up files for **CER8.1P1**:

```
$CERESHOME/tisa_avg/bin/cleanup_8.1P1.csh
```

2. Environment variable F90 must be set to the 64-bit SGI F90 compiler.

### 3.3 CER10.1P1 Main Processor

#### 3.3.1 Stand-alone Test Procedures for Terra

##### 3.3.1.1 PCF Generator

The Main Processor production script, **CER10.1P1**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. The PCF file for the test case is created by first executing an ASCII file generator, **tisavg\_ascii\_gen-test.csh**, and then executing the PCF generator, **tisavg\_pcfgen.csh**. The ASCII file generators source Subsystem 10.0-specific environment script **ENV10.1P1\_env.csh** and **setup\_test-env.csh**.

For production runs, the ASCII file generator, **tisavg\_ascii\_gen.csh**, must be executed to create the ASCII input file for a particular production run. The ASCII file generator requires four command-line arguments: 2-digit subsystem number(10); 4-digit Data Year(1998); 2-digit Data Month(02); and 1-character GGE data file exist flag(Y), (optional, default value = Y). The PCF generator, **tisavg\_pcfgen.csh**, then must be executed using the newly created ASCII input file name as a command-line argument.

**NOTE:** The PCF generator script, **tisavg\_pcfgen.csh**, uses the file PCF.template. Therefore, PCF.template must exist in the same directory.

1. Generate the ASCII input file for the test case:

```
cd $CERESHOME/tisa_avg/bin
source $CERESENV
source $CERESHOME/tisa_avg/bin/setup_test-env.csh
source $CERESHOME/tisa_avg/bin/ENV10.1P1-env.csh
setenv year 2000
setenv month 07
setenv DATADATE 200007
setenv INSTANCE Terra-FM1-MODIS_SSIT_000000.$DATADATE
$CERESHOME/tisa_avg/bin/tisavg_ascii_gen_test.csh 10 $year $month Y
```

The following file will be generated in **\$CERESHOME/tisa\_avg/rcf/**:

- **CER10.1P1\_PCFin\_\$INSTANCE**

  2. Generate the PCF for the test case:

```
$CERESHOME/tisa_avg/bin/tisavg_pcfgen.csh $CERESHOME/tisa_avg/rcf/
CER10.1P1_PCFin_$INSTANCE
```

The following PCF will be generated in **\$CERESHOME/tisa\_avg/rcf/**:

- **CER10.1P1\_PCF\_\$INSTANCE**

### 3.3.1.2 Execution

Execute the production script by typing the script name, **CER10.1P1**, followed by three command-line arguments: year (YYYY), month (MM), and PCF file name.

```
$CERESHOME/tisa_avg/bin/CER10.1P1 $year $month  
CER10.1P1_PCF_$INSTANCE
```

The Main Processor, Product Generation Executive (PGE) CER10.1P1, will be executed and will create the following files in **\$CERESHOME/tisa\_avg/data/data\_10/out\_comp**:

- **CER\_SRBAVG1\_\$INSTANCE**
- **CER\_SRBAVG1\_\$INSTANCE.met**
- **CER\_SRBAVG2\_\$INSTANCE**
- **CER\_SRBAVG2\_\$INSTANCE.met**
- **CER\_SRBAVG3\_\$INSTANCE**
- **CER\_SRBAVG3\_\$INSTANCE.met**
- **CER\_NQCRP\_\$INSTANCE**
- **CER\_NQCRP\_\$INSTANCE.met**
- **CER\_NRGRP\_\$INSTANCE**
- **CER\_NRGRP\_\$INSTANCE.met**
- **CER\_NVREG\_\$INSTANCE**
- **CER\_NVREG\_\$INSTANCE.met**

Create the following files in **\$CERESHOME/tisa\_avg/web/tsplot**:

- **SURF\_TSP\_\$DATADATE\2.pdf**
- **TOA\_TSP\_\$DATADATE\2.pdf**

Create the following files in **\$CERESHOME/tisa\_avg/web/plot/gif/TAVG\_\$DATADATE\2**:

- **CALB\_A\_\$DATADATE\2.gif**
- **CALB\_B\_\$DATADATE\2.gif**
- **CALB\_D\_\$DATADATE\2.gif**
- **CLDO\_HIGH\_\$DATADATE\2.gif**
- **CLDO\_LMID\_\$DATADATE\2.gif**
- **CLDO\_LOW\_\$DATADATE\2.gif**
- **CLDO\_UMID\_\$DATADATE\2.gif**
- **CLDP\_HIGH\_\$DATADATE\2.gif**
- **CLDP\_LMID\_\$DATADATE\2.gif**
- **CLDP\_LOW\_\$DATADATE\2.gif**
- **CLDP\_UMID\_\$DATADATE\2.gif**
- **CLW\_A\_\$DATADATE\2.gif**
- **CLW\_B\_\$DATADATE\2.gif**
- **CLW\_D\_\$DATADATE\2.gif**
- **CNF\_A\_\$DATADATE\2.gif**

- CNF\_B\_\$DATADATE\\_2.gif
- CNF\_D\_\$DATADATE\\_2.gif
- CSDLW\_A\_\$DATADATE\\_2.gif
- CSDLW\_B\_\$DATADATE\\_2.gif
- CSDLW\_D\_\$DATADATE\\_2.gif
- CSDSW\_A\_\$DATADATE\\_2.gif
- CSDSW\_B\_\$DATADATE\\_2.gif
- CSDSW\_D\_\$DATADATE\\_2.gif
- CSDWN\_A\_\$DATADATE\\_2.gif
- CSNLW\_A\_\$DATADATE\\_2.gif
- CSNLW\_B\_\$DATADATE\\_2.gif
- CSNLW\_D\_\$DATADATE\\_2.gif
- CSNSW\_A\_\$DATADATE\\_2.gif
- CSNSW\_B\_\$DATADATE\\_2.gif
- CSNSW\_D\_\$DATADATE\\_2.gif
- CSN\_B\_\$DATADATE\\_2.gif
- CSW\_A\_\$DATADATE\\_2.gif
- CSW\_B\_\$DATADATE\\_2.gif
- CSW\_D\_\$DATADATE\\_2.gif
- CWN\_A\_\$DATADATE\\_2.gif
- CWN\_B\_\$DATADATE\\_2.gif
- CWN\_D\_\$DATADATE\\_2.gif
- TALB\_A\_\$DATADATE\\_2.gif
- TALB\_B\_\$DATADATE\\_2.gif
- TALB\_D\_\$DATADATE\\_2.gif
- TLW\_A\_\$DATADATE\\_2.gif
- TLW\_B\_\$DATADATE\\_2.gif
- TLW\_D\_\$DATADATE\\_2.gif
- TNF\_A\_\$DATADATE\\_2.gif
- TNF\_B\_\$DATADATE\\_2.gif
- TNF\_D\_\$DATADATE\\_2.gif
- TSDLW\_B\_\$DATADATE\\_2.gif
- TSDSW\_A\_\$DATADATE\\_2.gif
- TSDSW\_B\_\$DATADATE\\_2.gif
- TSDSW\_D\_\$DATADATE\\_2.gif
- TSDWN\_A\_\$DATADATE\\_2.gif
- TSNLW\_A\_\$DATADATE\\_2.gif
- TSNLW\_B\_\$DATADATE\\_2.gif
- TSNLW\_D\_\$DATADATE\\_2.gif
- TSNSW\_A\_\$DATADATE\\_2.gif
- TSNSW\_B\_\$DATADATE\\_2.gif
- TSNSW\_D\_\$DATADATE\\_2.gif
- TSN\_B\_\$DATADATE\\_2.gif
- TSW\_A\_\$DATADATE\\_2.gif
- TSW\_B\_\$DATADATE\\_2.gif
- TSW\_D\_\$DATADATE\\_2.gif

- **TWN\_A\_\$DATADATE\\_2.gif**
- **TWN\_B\_\$DATADATE\\_2.gif**
- **TWN\_D\_\$DATADATE\\_2.gif**

### 3.3.1.3 Exit Codes

The processor CER10.1P1 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS). Successful completion is indicated by an exit code of 0. Failure is indicated by an exit code 202.

### 3.3.1.4 Main Processor Test Summary

Total Run Time:	15 minutes 47 seconds
Memory:	132752 K
Required Disk Space:	3.4 GB

## 3.3.2 Evaluation Procedures

When running the production script, **CER10.1P1**, the system message, ‘No match’, may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

### 3.3.2.1 Log and Status File Results

The Error and Status Log File, CER10.1P1\_LogReport\_\$INSTANCE, is located in directory \$CERESHOME/tisa\_avg/data/data\_10/runlogs.

### 3.3.2.2 Metadata

Metadata files which end in extension,’.met’, are located in the same directory as their corresponding output files after CER10.1P1 has been executed. Metadata files are written to directory, \$CERESHOME/tisa\_avg/data/data\_10/out\_comp.

### 3.3.2.3 Execution of Comparison Software

The delivered input files are in \$CERESHOME/tisa\_avg/data/data\_10/out\_exp and new input files from the execution are in \$CERESHOME/tisa\_avg/data/data\_10/out\_comp. These input files are accessed from those areas for the comparison.

| **eval\_ss10\_output\_Terra.csh** is a script needed to execute the comparison program. Type the following:

```
cd $CERESHOME/tisa_avg/test_suites/CER10.1P1
eval_ss10_output_Terra.csh $year $month
```

**NOTE:** The comparison software terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS). Successful completion is indicated by an exit code of 0. Failure is indicated by an exit code 202.

### 3.3.3 Solutions to Possible Problems

1. All output files are opened with status=NEW. These files must be removed before running test procedures. A script, which removes PGE created files, **cleanup\_10.1P1\_Terra.csh**, is located in directory **\$CERESHOME/tisa\_avg/bin**. To use the clean-up files for **CER10.1P1**:

```
$CERESHOME/tisa_avg/bin/cleanup_10.1P1_Terra.csh
```

2. Environment variable F90 must be set to the 64-bit SGI F90 compiler.

### 3.3.4 Stand-alone Test Procedures for Aqua

#### 3.3.4.1 PCF Generator

The Main Processor production script, **CER10.1P1**, references a Process Control File (PCF) which contains the correct file names and paths for the test procedures. The PCF file for the test case is created by first executing an ASCII file generator, **tisavg\_ascii\_gen-test.csh**, and then executing the PCF generator, **tisavg\_pcfgen.csh**. The ASCII file generators source Subsystem 10.0-specific environment script **ENV10.1P1\_env.csh** and **setup\_test-env\_Aqua.csh**.

For production runs, the ASCII file generator, **tisavg\_ascii\_gen.csh**, must be executed to create the ASCII input file for a particular production run. The ASCII file generator requires four command-line arguments: 2-digit subsystem number(10); 4-digit Data Year(1998); 2-digit Data Month(02); and 1-character GGEO data file exist flag(Y), (optional, default value = Y). The PCF generator, **tisavg\_pcfgen.csh**, then must be executed using the newly created ASCII input file name as a command-line argument.

**NOTE:** The PCF generator script, **tisavg\_pcfgen.csh**, uses the file PCF.template. Therefore, PCF.template must exist in the same directory.

1. Generate the ASCII input file for the test case:

```
cd $CERESHOME/tisa_avg/bin
source $CERESENV
source $CERESHOME/tisa_avg/bin/setup_test-env_Aqua.csh
source $CERESHOME/tisa_avg/bin/ENV10.1P1-env.csh
setenv year 2002
setenv month 07
setenv DATADATE 200207
```

```
setenv INSTANCE Aqua-FM3-MODIS_SSIT_000000.$DATADATE
$CERESHOME/tisa_avg/bin/tisavg_ascii_gen_test.csh 10 $year $month Y
```

The following file will be generated in **\$CERESHOME/tisa\_avg/rcf/**:

- **CER10.1P1\_PCFin\_\$INSTANCE**
2. Generate the PCF for the test case:

```
$CERESHOME/tisa_avg/bin/tisavg_pcfgen.csh $CERESHOME/tisa_avg/rcf/
CER10.1P1_PCFin_$INSTANCE
```

The following PCF will be generated in **\$CERESHOME/tisa\_avg/rcf/**:

- **CER10.1P1\_PCF\_\$INSTANCE**

### 3.3.4.2 Execution

Execute the production script by typing the script name, **CER10.1P1**, followed by three command-line arguments: year (YYYY), month (MM), and PCF file name.

```
$CERESHOME/tisa_avg/bin/CER10.1P1 $year $month
CER10.1P1_PCF_$INSTANCE
```

The Main Processor, Product Generation Executive (PGE) CER10.1P1, will be executed and will create the following files in **\$CERESHOME/tisa\_avg/data/data\_10/out\_comp**:

- **CER\_SRBAVG1\_\$INSTANCE**
- **CER\_SRBAVG1\_\$INSTANCE.met**
- **CER\_SRBAVG2\_\$INSTANCE**
- **CER\_SRBAVG2\_\$INSTANCE.met**
- **CER\_SRBAVG3\_\$INSTANCE**
- **CER\_SRBAVG3\_\$INSTANCE.met**
- **CER\_NQCRP\_\$INSTANCE**
- **CER\_NQCRP\_\$INSTANCE.met**
- **CER\_NRGRP\_\$INSTANCE**
- **CER\_NRGRP\_\$INSTANCE.met**
- **CER\_NVREG\_\$INSTANCE**
- **CER\_NVREG\_\$INSTANCE.met**

Create the following files in **\$CERESHOME/tisa\_avg/web/tsplot**:

- **SURF\_TSP\_\$DATADATE\4.pdf**
- **TOA\_TSP\_\$DATADATE\4.pdf**

Create the following files in \$CERESHOME/tisa\_avg/web/plot/gif/TAVG\_\$DATADATE\\_4:

- CALB\_A\_\$DATADATE\\_4.gif
- CALB\_B\_\$DATADATE\\_4.gif
- CALB\_D\_\$DATADATE\\_4.gif
- CLDO\_HIGH\_\$DATADATE\\_4.gif
- CLDO\_LMID\_\$DATADATE\\_4.gif
- CLDO\_LOW\_\$DATADATE\\_4.gif
- CLDO\_UMID\_\$DATADATE\\_4.gif
- CLDP\_HIGH\_\$DATADATE\\_4.gif
- CLDP\_LMID\_\$DATADATE\\_4.gif
- CLDP\_LOW\_\$DATADATE\\_4.gif
- CLDP\_UMID\_\$DATADATE\\_4.gif
- CLW\_A\_\$DATADATE\\_4.gif
- CLW\_B\_\$DATADATE\\_4.gif
- CLW\_D\_\$DATADATE\\_4.gif
- CNF\_A\_\$DATADATE\\_4.gif
- CNF\_B\_\$DATADATE\\_4.gif
- CNF\_D\_\$DATADATE\\_4.gif
- CSDLW\_A\_\$DATADATE\\_4.gif
- CSDLW\_B\_\$DATADATE\\_4.gif
- CSDLW\_D\_\$DATADATE\\_4.gif
- CSDSW\_A\_\$DATADATE\\_4.gif
- CSDSW\_B\_\$DATADATE\\_4.gif
- CSDSW\_D\_\$DATADATE\\_4.gif
- CSDWN\_A\_\$DATADATE\\_4.gif
- CSNLW\_A\_\$DATADATE\\_4.gif
- CSNLW\_B\_\$DATADATE\\_4.gif
- CSNLW\_D\_\$DATADATE\\_4.gif
- CSNSW\_A\_\$DATADATE\\_4.gif
- CSNSW\_B\_\$DATADATE\\_4.gif
- CSNSW\_D\_\$DATADATE\\_4.gif
- CSN\_B\_\$DATADATE\\_4.gif
- CSW\_A\_\$DATADATE\\_4.gif
- CSW\_B\_\$DATADATE\\_4.gif
- CSW\_D\_\$DATADATE\\_4.gif
- CWN\_A\_\$DATADATE\\_4.gif
- CWN\_B\_\$DATADATE\\_4.gif
- CWN\_D\_\$DATADATE\\_4.gif
- TALB\_A\_\$DATADATE\\_4.gif
- TALB\_B\_\$DATADATE\\_4.gif
- TALB\_D\_\$DATADATE\\_4.gif
- TLW\_A\_\$DATADATE\\_4.gif
- TLW\_B\_\$DATADATE\\_4.gif
- TLW\_D\_\$DATADATE\\_4.gif
- TNF\_A\_\$DATADATE\\_4.gif

- **TNF\_B\_\$DATADATE\4.gif**
- **TNF\_D\_\$DATADATE\4.gif**
- **TSDLW\_B\_\$DATADATE\4.gif**
- **TSDSW\_A\_\$DATADATE\4.gif**
- **TSDSW\_B\_\$DATADATE\4.gif**
- **TSDSW\_D\_\$DATADATE\4.gif**
- **TSDWN\_A\_\$DATADATE\4.gif**
- **TSNLW\_A\_\$DATADATE\4.gif**
- **TSNLW\_B\_\$DATADATE\4.gif**
- **TSNLW\_D\_\$DATADATE\4.gif**
- **TSNSW\_A\_\$DATADATE\4.gif**
- **TSNSW\_B\_\$DATADATE\4.gif**
- **TSNSW\_D\_\$DATADATE\4.gif**
- **TSN\_B\_\$DATADATE\4.gif**
- **TSW\_A\_\$DATADATE\4.gif**
- **TSW\_B\_\$DATADATE\4.gif**
- **TSW\_D\_\$DATADATE\4.gif**
- **TWN\_A\_\$DATADATE\4.gif**
- **TWN\_B\_\$DATADATE\4.gif**
- **TWN\_D\_\$DATADATE\4.gif**

### 3.3.4.3 Exit Codes

The processor CER10.1P1 terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS). Successful completion is indicated by an exit code of 0. Failure is indicated by an exit code 202.

### 3.3.4.4 Main Processor Test Summary

Total Run Time:	20 minutes 05 seconds
Memory:	132752 K
Required Disk Space:	3.4 GB

### 3.3.5 Evaluation Procedures

When running the production script, **CER10.1P1**, the system message, ‘No match’, may be written to the screen. This message occurs when the script tries to remove an old output file that does not exist. This does not signify a problem.

#### 3.3.5.1 Log and Status File Results

The Error and Status Log File, CER10.1P1\_LogReport\_\$INSTANCE, is located in directory \$CERESHOME/tisa\_avg/data/data\_10/runlogs.

### 3.3.5.2 Metadata

Metadata files which end in extension, '.met', are located in the same directory as their corresponding output files after CER10.1P1 has been executed. Metadata files are written to directory, \$CERESHOME/tisa\_avg/data/data\_10/out\_comp.

### 3.3.5.3 Execution of Comparison Software

The delivered input files are in \$CERESHOME/tisa\_avg/data/data\_10/out\_exp and new input files from the execution are in \$CERESHOME/tisa\_avg/data/data\_10/out\_comp. These input files are accessed from those areas for the comparison.

**eval\_ss10\_output\_Aqua.csh** is a script needed to execute the comparison program. Type the following:

```
cd $CERESHOME/tisa_avg/test_suites/CER10.1P1
eval_ss10_output_Aqua.csh $year $month
```

**NOTE:** The comparison software terminates using the CERES-defined EXIT CODES for the Langley TRMM Information System (LaTIS). Successful completion is indicated by an exit code of 0. Failure is indicated by an exit code 202.

### 3.3.6 Solutions to Possible Problems

1. All output files are opened with status=NEW. These files must be removed before running test procedures. A script, which removes PGE created files, **cleanup\_10.1P1\_Aqua.csh**, is located in directory **\$CERESHOME/tisa\_avg/bin**. To use the clean-up files for **CER10.1P1**:

```
$CERESHOME/tisa_avg/bin/cleanup_10.1P1_Aqua.csh
```

2. Environment variable F90 must be set to the 64-bit SGI F90 compiler.

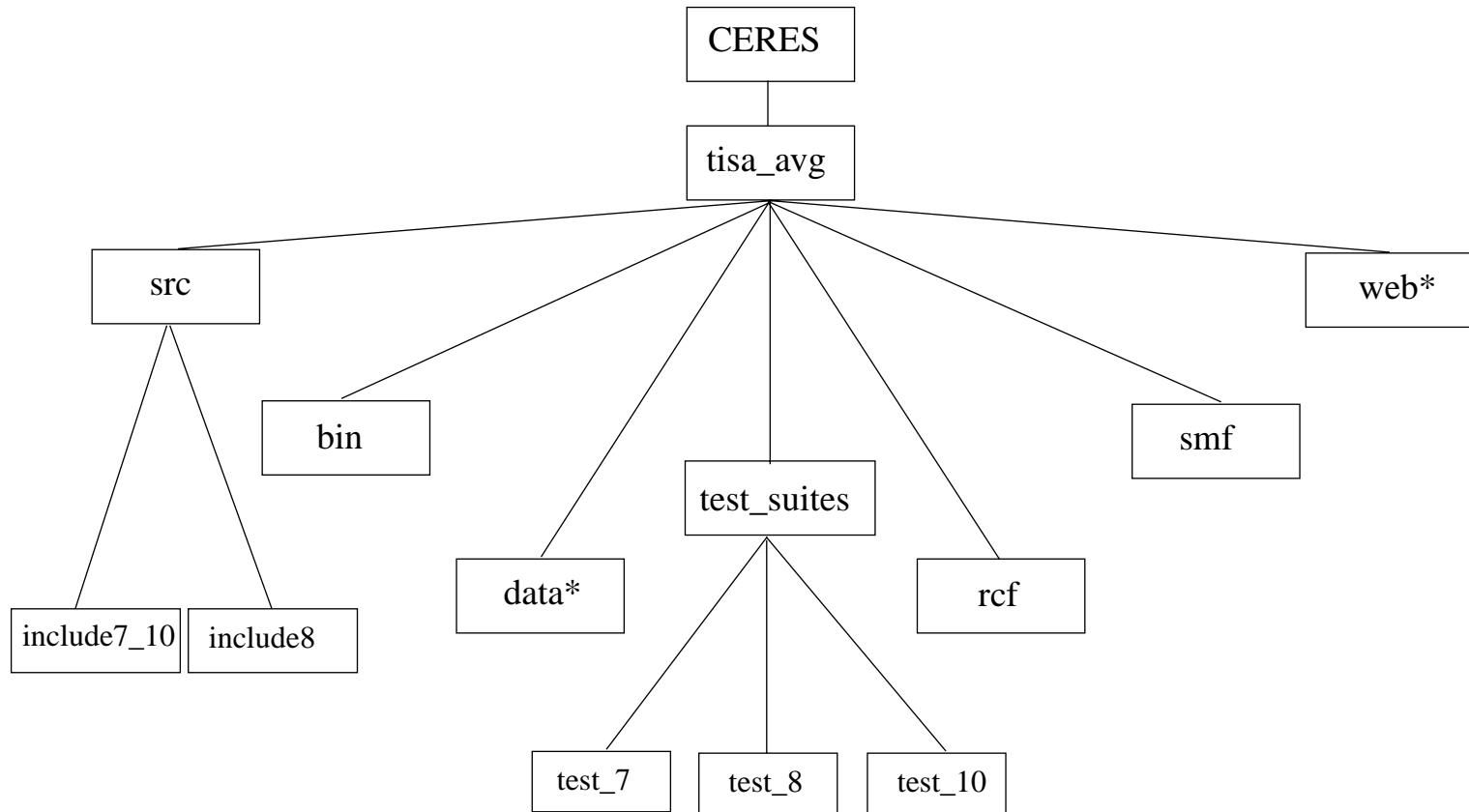
## Appendix A Acronyms and Abbreviations

ADM	Angular Distribution Models
ASCII	American Standard Code Information Interchange
ASDC	Atmospheric Sciences Data Center
AVG	Monthly Regional Radiative Fluxes and Clouds
CERES	Clouds and the Earth's Radiant Energy System
CERESLib	CERES Library
DAAC	Distributed Active Archive Center
ECS	EOSDIS Core System
EOS	Earth Observing System
EOS-AM	EOS Morning Crossing Mission
EOSDIS	EOS Data Information System
EOS-PM	EOS Afternoon Crossing Mission
ERBE	Earth Radiation Budget Experiment
ERBS	Earth Radiation Budget Satellite
FSW	Gridded Single Satellite Fluxes and Clouds and Compute Spatial Averages
GB	Gigabytes
F90	Fortran 90
FOV	Field-of-View
GGEOT	Geostationary data file
GMT	Greenwich mean time
HDF	Hierarchical Data Format
HDF-EOS	Hierarchical Data Format - Earth Observing System
KB	Kilobytes
LaRC	Langley Research Center
LaTIS	Langley TRMM Information System
LW	Longwave
MB	Megabytes
MCF	Metadata Control Files
met	metadata file
MM	Two digit month
MOA	Meteorological, Ozone, and Aerosol
N/A	Not Applicable
NASA	National Aeronautics and Space Administration
NOAA	National Oceanic and Atmospheric Administration
PCF	Process Control File

PGE	Product Generation Executive
PMOA	Post Meteorological, Ozone, and Aerosol
PSF	Point Spread Function
QC	Quality Control
SAIC	Science Applications International Corporation
SDP	Science Data Production
SARB	Surface and Atmospheric Radiation Budget
SFC	Hourly Gridded Single Satellite TOA and Surface Fluxes and Clouds
SMF	Status Message File
SRBAVG	Monthly TOA and SRB Averages
SRD	Software Requirements Document
SW	Shortwave
SYN	Synoptic Radiative Fluxes and Clouds
TISA	Time Interpolation and Spatial Averaging
TOA	Top-of-the-Atmosphere
TRMM	Tropical Rainfall Measuring Mission
TSI	Time Space Interpolate
UT	Universal Time

## Appendix B Directory Structure Diagram

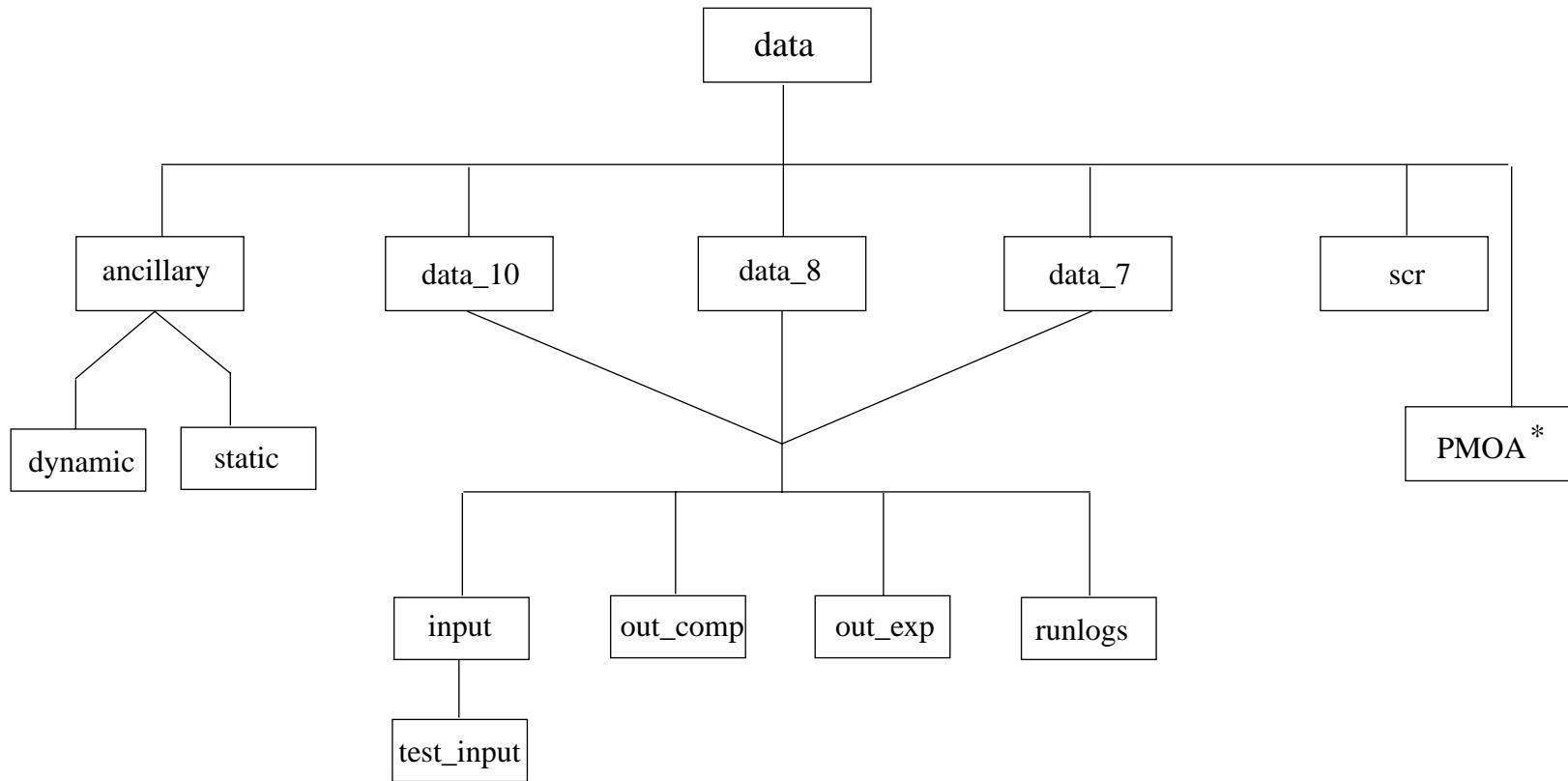
### Directory Structure for the TISA Averaging Tar File



\* Breakdown of subdirectories shown on following pages.

Figure B-1. Directory Structure for the TISA Averaging (tisa\_avg) Tar File (1 of 3)

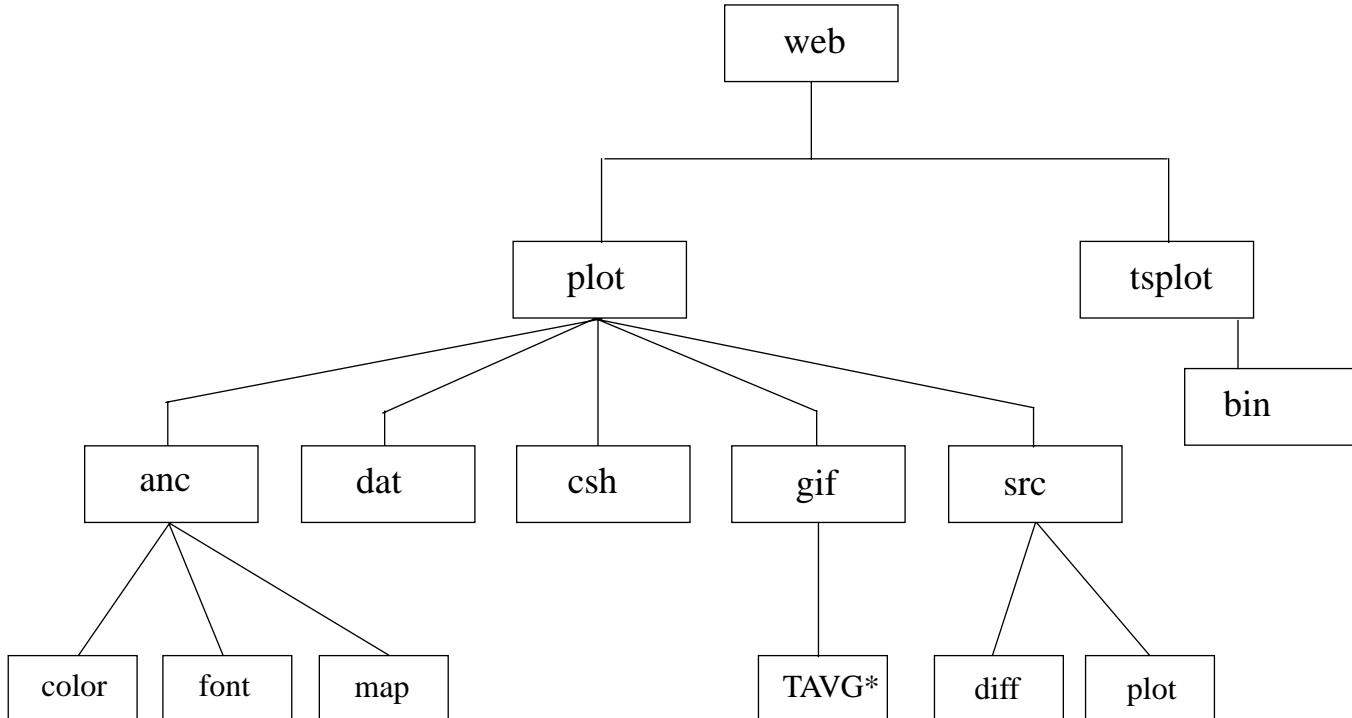
## Breakdown of the *tisa\_avg/data* Directory



\* PMOA files are included in this delivery.

Figure B-1. Directory Structure for the TISA Averaging (*tisa\_avg*) Tar File (2 of 3)

## Breakdown of the *tisa\_avg/web* Directory



\* file ends with four digits of the year and two digits of the month and

Figure B-1. Directory Structure for the TISA Averaging (*tisa\_avg*) Tar File (3 of 3)

## Appendix C

### File Description Tables

#### C.1 Production Scripts

The following scripts must be moved to the production environment.

Table C.1-1. Production Scripts @ (\$CERESHOME/tisa\_avg/bin)

File Name	Format	Description
tisavg_ascii_gen.csh	ASCII	C-Shell script which creates the PCF generator's ASCII file needed Main Processor PCF file generator script
tisavg_ascii_gen_test.csh	ASCII	C-Shell script which creates the PCF generator's ASCII file needed Main Processor PCF file generator script. <b>Not a production script.</b>
tisavg_pcfgen.csh	ASCII	C-Shell script which creates the PCF file for the main processor.
setupenv.csh	ASCII	C-Shell script which sets the sampling strategy, production strategy, configuration code, SCCR environment variables.
ENV10.1P1-env.csh	ASCII	C-Shell script which sets the sampling strategy and production strategy for SS10.
CER10.1P1	ASCII	C-Shell Script which executes the SS10 Main Processor

#### C.2 Executables

Table C.2-1. Executables

File Name	Format	Description
tisa_710.exe <sup>1</sup>	Binary	Main Processor executable
webplot.exe <sup>1</sup>	Binary	Executable to create data files for web plots

1. These files will be generated on execution of Subsystem software and are not included in the tar file.

### C.3 Status Message Files

Table C.3-1. Status Message Files @ (\$CERESHOME/tisa\_avg/smf)

File Name	Format	Description
TISAVG_26300.t	ASCII	Status Message File for Subsystem 10.0

### C.4 Ancillary Input Data

Table C.4-1. Ancillary Input Data @ (\$CERESHOME/tisa\_avg/data/ancillary/static)

File Name	Format	Description
CERES_DIR_MODEL.19971212	Binary	Directional Models, TOA
Refl_Coef.19971107	ASCII	Directional Models, Surface
NIISW03.19971101	Binary	SW Angular Distribution Models (ADM)
NIILWAT.19971101	Binary	LW ERBE ADM for Sep., Oct., Nov.
NIILWSP.19971101	Binary	LW ERBE ADM for Mar., Apr., May
NIILWSM.19971101	Binary	LW ERBE ADM for Jun., Jul., Aug.
NIILWWN.19971101	Binary	LW ERBE ADM for Dec., Jan., Feb
georc.19971212	Binary	Coefficient file.
CER_GGEO_CERES_Composite_007002.199801	Binary	GGEO product produced by Subsystem 11.
range_values.19980204	ASCII	Contains valid range values for all TISA Averaging data product parameters
valid_regions.19980316	ASCII	Contains the validation region numbers.

## C.5 Processing Control Files (PCF), Metadata Control Files (MCF)

Table C.5-1. Process Control Files (PCF) @ (CERESHOME/tisa\_avg/rcf)

File Name.	Format	Description
CER10.1P1_PCFin_TRMM-PFM-VIRS-ValidationR2_000000.199801 <sup>1</sup>	ASCII	ASCII file created by the ASCII file generator to be used by the Main Processor's PCF generator
CER10.1P1_PCF_TRMM-PFM-VIRS-ValidationR2_000000.199801 <sup>1</sup>	ASCII	Process control file for ss10 Main Processor

1. These files will be generated on execution of Subsystem software and are not included in the tar file.

Table C.5-2. Metadata Control Files (MCF) for Subsystem 10.0  
@ (\$CERESHOME/tisa\_avg/rcf)

File Name	Format	Description
SRBAVGB.MCF	ASCII	MCF for binary SRBAVG (SS10) Main Processor
SRBAVG1.MCF	ASCII	MCF for HDF-EOS SRBAVG1 (SS10) Main Processor
SRBAVG2.MCF	ASCII	MCF for HDF-EOS SRBAVG2 (SS10) Main Processor
NQCRPMCF	ASCII	MCF for QC Report for SS10
NVREG.MCF	ASCII	MCF for SS10 Validation File